

Appln No.: 10/605,671
Amendment Dated: March 23, 2005
Reply to Office Action of December 27, 2004

REMARKS/ARGUMENTS

This is in response to the Office Action mailed December 27, 2004 for the above-captioned application. Reconsideration and further examination are respectfully requested.

Applicants note that an Information Disclosure Statement was filed in this case on January 24, 2005, after the mailing of the Official Action. Consideration of this paper and return of initialed Form PTO 1449 with the next action are requested.

The Examiner objected to claim 61. Claim 61 has been amended. Support for the amendment is found at ¶¶ 16-18 in the specification as filed.

The Examiner rejected claims 1-3, 7, 12-17, 20-22, 31-36, 39-41, 48-50, 56-58 and 61 stand rejected under 35 USC § 102(b) as anticipated by or obvious over US Patent No. 5,451,632 of Okamura. Applicants respectfully traverse this rejection.

Looking first at the anticipation rejection, Applicants note that in order for there to be anticipation, the reference must disclose each and every element of the claimed invention. In this case, claim 1 requires (1) a polycarbonate; (2) a polycarbonate-siloxane copolymer, the amount of siloxane in the total composition being at least 3 wt % and (3) a titanium dioxide pigment with an organic coating, in an amount of 1 to 2.5% of the total composition. The cited Okamura reference fails to disclose all of these elements. Specifically, while Okamura refers to titanium dioxide, it does not specify that the titanium dioxide has a coating of an organic material. The teaching of using a silicone oil for "improvement of dispersion" (Col. 12, lines 57-59) is not an express teaching of coated TiO₂, but could also be an addition of silicone oil as a separate component. This is insufficient to establish a rejection under 35 USC § 102. Thus, this element of the claims is not met, and there can therefore be no anticipation.

Turning to the obviousness rejection, the present claims are directed to a specific combination of components that address a specific problem, namely that the addition of polycarbonate-siloxane copolymer to polycarbonate compositions with titanium dioxide actually reduces the flame performance of the compositions. This is an exception to the more general case in which the addition of the copolymers enhance flame performance on which the Okumura reference is based. This is illustrated in the results shown in Example 1, and in particular Table 3 where it can be seen that in compositions 1-11 containing TiO₂, polycarbonate and PC-PDMS copolymer (12%, 2.4% siloxane in composition) none of the compositions had a reasonable expectation of meeting the V0 flame test standard. It is not an exception that can be deduced from Okumura, however, because none of the compositions reported in Tables 1D and 2D that contain titanium dioxide (F1) and the copolymer contain any polycarbonate.

Appln No.: 10/605,671

Amendment Dated: March 23, 2005

Reply to Office Action of December 27, 2004

It is further noted that the Examiner relies on Table 2 C in the Okumura reference for a teaching of achieving V0 flame retardance. Applicants respectfully point out, however, that this table does not show results for compositions containing titanium dioxide, and that the results achieved in this instance are not of significance to the presently claimed invention. Thus, the Examiner's statement that claim 31 is anticipated based on this table is in error.¹

Not only does Okumura not recognize the problem that the present application solves, the disclosure of Okumura does not suggest the specific limitations of the claims. Tables 4 and 5 in this application show the results when the amount of copolymer is increased, using an organic coated TiO₂. As shown, (example 13 and 20), adequate performance can be achieved using either lower amounts of TiO₂ or higher amounts (4% of siloxane). Example 3 uses copolymers containing 18% copolymer (3.6% siloxane) or 17.8% copolymer (3.56% siloxane) and two types of coated TiO₂. These samples within the scope of the invention consistently achieved over or near 90% likelihood of passing the V0 test.

Furthermore, while the Examiner has included claims 2, 32, and 49, and the claims dependent thereon (all of the rejected claims except 1, 31, and 48) in the rejection, no mention is made in the rejection of the requirement that the bulk resin is at least 50% of the composition. This means that necessarily the amount of polycarbonate-siloxane copolymer is less than 50%. No example of Okumura that contains TiO₂ contains both polycarbonate and a polycarbonate-siloxane copolymer, so there is clearly no teaching in the direction of compositions as claimed. Furthermore, it is noted that the PC-siloxane copolymer disclosed in Okumura with the highest amount of siloxane is example 2A, which has 3.8% PDMS. If this amount were used in a composition containing 50% copolymer, the amount of siloxane would be 1.9% which is outside the scope of the present claims.

MPEP § 2131.03 is applicable to the present case. It states that

When the prior art discloses a range which touches, overlaps or is within the claimed range, but no specific examples falling within the claimed range are disclosed, a case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with "sufficient specificity to constitute an anticipation under the statute." What constitutes a "sufficient specificity" is fact dependent. If the claims

¹ For completeness, Applicants would further note that the Examiner has reversed the relationship between flame resistance and thickness. A rating at a given thickness indicates performance at greater thickness, not at thicknesses below the test thickness.

Appln No.: 10/605,671

Amendment Dated: March 23, 2005

Reply to Office Action of December 27, 2004

are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims. The unexpected results may also render the claims unobvious. The question of "sufficient specificity" is similar to that of "clearly envisaging" a species from a generic teaching. See MPEP § 2131.02.

In the present case, the Examiner has not address how the Okumura reference meets the "sufficient specificity" test. Certainly, Okumura teaches broad ranges for the amount of copolymer (0.1 to 99.9%) and nothing in the reference would steer the person skilled in the art to amounts as claimed in the particular case of TiO_2 as the pigment. It is also noted that the problem that the present invention solved is not a problem for carbon black, thus providing further evidence of the unexpected nature of the present results.

Finally, the Examiner has relied to a significant extent on the teaching in the Okumura reference concerning the importance of having a specified amount of diorganosiloxane. It is noted, however, that in the specific claimed case of TiO_2 Okumura's limits are shown to be in error by the results in Example 1. Thus, whatever value Okumura's teachings may have to a more general claim, they are not convincing or applicable with respect to the invention as claimed.

For these reasons, Applicants submit that the anticipation rejection is in error and should be withdrawn. In addition, the claims that are rejected solely under § 103 are patentable for the same reasons. Applicants offer the following additional comments, however, on the examiner's arguments.

The Examiner states that claims 4-5 and 51-52 are obvious because Okumura mentions SBS and ABS impact modifiers, and that adding an additional material for its known function is obvious as a matter of law. This is not the case. It is known in the art that adding rubbery impact modifiers to polycarbonate is detrimental to fire retardance, and this is established in the Comparative examples of Tables 1F and 2F. Therefore, the question of whether adding the material to a given composition is obvious is fact dependent. Here, the reference teaches that adding the material to polycarbonate is detrimental, and that adding it to PC-PDMS copolymer is not. No TiO_2 is present in these compositions, and no PC/copolymer blends were tested. Thus, there is no suggestion to add a rubbery impact modifier to a composition containing at less than 50% of the PC-siloxane copolymer.

With respect to claims 33-37, the Examiner states that there is no criticality with respect to the "first thickness." Applicants point out that the "first thickness" in claim 31 is the

Appln No.: 10/605,671

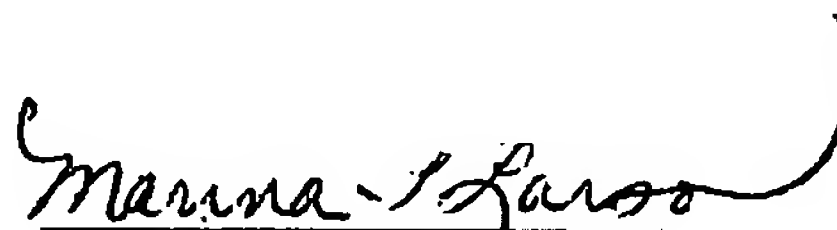
Amendment Dated: March 23, 2005

Reply to Office Action of December 27, 2004

minimum wall thickness that an article may have. (See ¶ 53). The amount of polycarbonate-siloxane copolymer required to achieve a V0 rating depends inversely on this thickness, with higher amounts being needed when the wall is thinner. (See Table in ¶ 53). In the case of a minimum wall thickness of 1.6 mm the amount of siloxane need to be at least 3% by weight of the composition (claim 33). Thus, there is a relationship between the minimum wall thickness and the amount of siloxane that is significant, and that the Examiner may not ignore. The Examiner has not indicated where a teaching of this amount, or rendering this amount obvious is found in the reference.

For these reasons, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully submitted,



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